

**REMARKS**

Reconsideration in light of the foregoing amendments and remarks which follow is respectfully requested.

Claims 3 and 4, 7-8 and 10-14 are before the Examiner. Claims 3 and 4 have been amended to more clearly define the doped pyrogenically produced metal oxide. (Support for the modified BET range is found on page 12 at line 12 and Table 2.) Claim 5 has been cancelled. It is arguably duplicative of claim 3. Claim 7 has been amended to address points raised on the last Office Action. Claims 13 and 14 have been added. These claims are directed to the aluminum oxide doped silica. These claims are clearly commensurate in scope with the results shown in Tables 5, 6 and the Rule 132 declaration previously submitted.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully traverse.

It would appear from the Office Action that the Examiner desires a more detailed description of the "remixing" step. This has been provided by amendment.

Withdrawal of the rejection is respectfully requested.

Claims 3, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al., JP 2000-169132 in view of the teachings taken from Chapter 6 of Handbook of Fillers (second edition) edited by Wypych, Herzig (U.S. Patent No. 4,101,499), Penneck (U.S.

Patent No. 4,001,128) and Cyprien Guy et al. (U.S. Patent No. 4,886,661). Applicants respectfully traverse the rejection.

The method claims were found to be free of this rejection.

Claims 3 and 8 are directed to a rapid dissolving reinforcing filler composition for organic systems. Claim 3 as amended describes the pyrogenically produced oxide in more detail in terms of BET and the homogeneous distribution of the dopant within the pyrogenically produced oxide particle. The oxide core and the silane modifying agent contribute to the properties of the claimed particle effect. Claim 8 specifies that the cyclic polysiloxane is D 4. New claim 13 specifies that the pyrogenically produced oxide is silica and the dopant is aluminum oxide or aluminum.

Relative to the claimed compositions there are at least two selections that need to be made- the pyrogenic silica and the silane- relative to the applied art. As to claim 8, D4 needs to be selected. As to the new claim 13, aluminum oxide doped pyrogenic silica needs to be selected for use in the claimed composition.

A translation of the Japanese patent document, mentioned in a prior Office Action, was not provided to Applicants by the Office. Previously, the Examiner referenced a Mangold et al. published patent application (US 20003/0185739) as an equivalent English language document to the primary reference. The comments that follow reference the published U.S. application.

Mangold et al. teach a pyrogenically produced silicon dioxide doped with aluminum oxide. Its manner of preparation is contrasted with a "co-fumed" process where a mixed oxide product is produced. See paragraph No. 5. The Mangold et al product is characterized as extremely readily dispersible in polar media, such as water, and is further characterized as being

highly suitable for use in inkjet paper and inkjet film applications. See paragraph No. 7. There is a mention of various "filler" uses, e.g. inkjet paper or other inkjet materials, etc., in paragraph No. 15.

In paragraph No. 51, structure differences of the Mangold et al. product relative to OX 50, a commercially available silica, are discussed. The Mangold et al product is characterized as having very low DBP values. These low values are described as permitting the preparation of low viscosity dispersions. The possibility of dispersions having elevated filler content are mentioned.

Table 3 (paragraph No. 57) contrasts the low and high surface area Mangold products with various commercially available pyrogenic oxide and mixed oxide products.

There is no mention of surface modification. There is no mention of surface modification with silanes. The hydrophilic nature of the Mangold et al product is desired and necessary for the taught utility. It is not seen why one would modify the hydrophilic surface so that it is hydrophobic since this would destroy the product's taught utility.

Wypych is characterized by the Office as teaching that fillers typically have hydrophilic surfaces, that certain polymers are hydrophobic and that silanes have been taken a "lead" role as modifiers for inorganic fillers. Herzig, Cyprien Guy and Penneck are cited in combination as illustrating cyclosiloxanes, silazanes, oligomeric telechelic polysiloxanes, and other organosilicon compounds as compatibilizing agents for polymers.

The Examiner has assembled references that teach the existence of various technologies. The examiner then asserts that it would be obvious to use these technologies to arrive at the claimed invention. What is not clear to Applicants is why one of ordinary skill in the art would

be motivated to hydrophobize the desired hydrophilic surface of the Mangold et al. product so that it would no longer function as taught.

Further, the secondary references do not suggest that an aluminum oxide doped, pyrogenically produced silica would be useful as a reinforcing filler in organic systems. Accordingly, it is not clear why one would select the Mangold et al. product for silanization. The mere fact that a reaction exist does not mean that it should be with some guidance and motivation for doing so. Absence such teachings (guidance and motivation), the assembled references beg the question as to why they should be combined. Clearly they should not be combined to destroy the taught utility of the primary reference. The teaching of the references alone or in combination purpose do not suggest the selection of the Mangold product as a reinforcing filler for an organic system. What the art does not teach, the Examiner can not supply by speculation nor should the Examiner seek to remedy the situation by relying on the teachings present in Applicants' specification.

Withdrawal of the rejection is respectfully requested since a prima-facie case has not been established.

Further, described in the Rule 132 declaration, previously submitted, is hydrophobing of potassium-doped pyrogenic silicic acid. Two products, which fall within the scope of the claims, are identified in Table 4. These surface modified pyrogenic silicic acid products are contrasted with hydrophilic pyrogenic silicic acid products (no surface modifications). See page 7 of the declaration. The use of these products in vulcanized products resulted in unexpected properties - transparency and tear resistance. See Table 6. The products are also observed as imparting extremely low viscosities and yield points. It is submitted that the claims are commensurate in

scope with these showings. The claimed dopants and pyrogenic prepared oxides are disclosed as being equivalent to those exemplified in the declaration. The Examiner's dismissal of these experimentally established results by mere conclusionary remarks does not advance prosecution or provide Applicants with an opportunity to respond to the Examiner's true concerns.

It is submitted that the references, taken alone or in combination do not establish a proper *prima facie* case. Further, should the Examiner still find a *prima facie* case to exist, the results shown in the Rule 132 declaration should be considered as rebutting such a case. Withdrawal of the rejection is respectfully requested.

Claims 3-5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hemme et al., U.S. patent application Publication No. 2002/0018741 in view of the teachings taken from Chapter 6 of Handbook of Fillers (second edition) edited by Wypych, Herzig (U.S. Patent No. 4,101,499), Penneck (U.S. Patent No. 4,001,128) and Cyprien Guy et al. (U.S. Patent No. 4,886,661). Applicants respectfully traverse the rejection.

Hemme et al. teach a pyrogenically prepared titanium dioxide doped with aluminum oxide (see Examples 1, 9 and 17). The doped titanium dioxide may be used as a photocatalyst or as a UV adsorber. The photocatalytic activity is characterized as suitable for the degradation of impurities in waste water or waste air. See paragraph No. 22. The doped titanium is suspended in the waste water and place on a support when used to treat waste air. When the doped titanium dioxides have low photocatalytic activity, they may be used as an adsorbent for UV radiation. As an adsorbent for UV radiation, they may be used in the coating of glasses or in plastics. See paragraph No. 23. A higher degree of doping contributes towards lowering photocatalytic

activity. See paragraph 29. Surface area of the doped titanium dioxide may also impact photocatalytic activity. See paragraphs No. 30 and No. 31. The focus of the patent is on the photocatalytic activity, a surface effect, and its use degrade chlorinated hydrocarbons.

There is no mention of the doped titanium dioxide in Hemme et al. to reinforce plastics. There is no mention of a need for surface modification of the Hemme et al. product. There is no mention of treating the Hemme et al. doped titanium dioxide surface with a silane.

The secondary references appear to be relied upon in a similar fashion as above.

The Examiner has again assembled references to show the existence of various technologies. The examiner then posits that it would have been obvious to assemble these technologies, without any guidance or motivation to arrive at the claimed invention. What is not clear to Applicants is why one of ordinary skill in the art would wish to hydrophobize a hydrophilic surface so that it may no longer function in an appropriate manner.

The secondary references do not suggest that an aluminum oxide doped, pyrogenically produced titanium dioxide would be useful as a reinforcing filler in organic systems. While the secondary reference do teach silanization, there remains a question why they should be combined with Hemme et al. Clearly they should not be combined to destroy the taught utility of the primary reference. Further, they do not suggest the suitability of the Hemme et al. product to reinforce plastics. The mere fact that one could apply a reaction does not establish that it would have been obvious to do so. With the presence of motivation, guidance, and an expectation of success, one has a situation of it would be "obvious to try". This is not statutory obviousness.

Withdrawal of the rejection is respectfully requested since a prima-facie case has not been established.

Further, the Rule 132 declaration, discussed above, should be considered here. Two products, which fall within the scope of the claims, are identified in Table 4. These surface modified pyrogenic silicic acid products are contrasted with hydrophilic pyrogenic silicic acid products (no surface modifications). See page 7 of the declaration. The use of these products in vulcanized products resulted in unexpected properties - transparency and tear resistance. See Table 6. The products are also observed as imparting extremely low viscosities and yield points. It is submitted that the claims are commensurate in scope with these showings.

It is submitted that the references, taken alone or in combination do not establish a proper *prima facie* case. However, should the Examiner deem a *prima facie* case to exist, the results shown in the Rule 132 declaration should be considered as rebutting such a case. Withdrawal of the rejection is respectfully requested.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al., JP 2000-169132 in view of the teachings taken from Chapter 6 of Handbook of Fillers (second edition) edited by Wypych, Herzig (U.S. Patent No. 4,101,499), Penneck (U.S. Patent No. 4,001,128) and Cyprien Guy et al. (U.S. Patent No. 4,886,661) and also in view of Lenz (U.S. Patent No. 3,122,520). Applicants respectfully traverse the rejection.

Claim 4 is direct to a method for producing aerosol doped, surface-modified pyrogenically produced oxides. The aerosol doped-pyrogenically produced oxides is placed in a suitable mixing container and then sprayed with water and/or acid followed by spraying the water or acid treated oxides under intensive mixing conditions, where oxygen is excluded, with

one or more surface-modification to form the aerosol doped, surface-modified, pyrogenically produced oxides.

None of the references teach or suggest a process where the surface of a cerium, aluminum oxide or potassium doped pyrogenically produced oxide is modified with a silane.

The deficiencies of the references previously mentioned are not remedied by Lenz.

Lenz teaches a two step process where a silica sol under strong acid conditions to form a hydrogel followed by a second step where an organosilicon is mixed with the hydrogel. (The essence of the Lenz invention is described in the patent as residing in heating a silica hydrosol under strong acid conditions prior to reaction with the organosilicon compound.) Lenz does not deal with a pyrogenically produced silica. The applicability of the teachings of Lenz to the situation at hand, where doped pyrogenically produced silica is not apparent) is not readily apparent.

Since Lenz, like the secondary references, does not remedy the deficiencies of the primary reference, withdrawal of the rejection is believed to be in order since a proper *prima facie* case has not been established.

In view of the foregoing amendments and remarks, the application is believed to be in condition for allowance and a notice to that effect is respectfully requested.

Should the Examiner not find the Application to be in allowable condition or believe that a conference would be of value in expediting the prosecution of the Application, Applicants request that the Examiner telephone the undersigned Counsel to discuss the case and afford Applicants an opportunity to submit any Supplemental Amendment that might advance prosecution and place the Application in allowable condition.

Respectfully submitted,



Thomas G. Wiseman  
(Registration No. 35,046)

4/3/07

VENABLE  
Post Office Box 34385  
Washington, DC 20043-9998  
Telephone: (202) 344-4800  
Direct dial: (202) 344-4614  
Telefax: (202) 344-8300

DC2-DOCS1-837228v2